Thin film drying of liquid foodstuffs

Project: CS-01-09
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Incentive:

To provide an alternative for spray dryers for the drying of liquid foodstuffs. Agitated Thin Film Dryers should offer more energy efficient drying processes for liquid foodstuffs than a spray dryer, also combined with lower investment costs.

Objective:

Demonstrate the feasibility of an ATFD for the drying of different types of food stuffs.

Approach:

- The 1st part of the project is smallscale lab tests (drying, distillation). During these tests the drying behavior of the products (foaming, stickiness, crystallization, gelling etc) will be investigated.
- The pilot trials will be performed based on these observations.
- Designs of Experiments will be used to determine an operating window and the obtained powders will be characterized.
- A preliminary benchmark can be made based on the information from the tests.

Results:

What was observed by the lab tests is that different product types will probably require different settings and operation on the ATFD.
Adapting the feed temperature was sometimes needed to decrease the viscosity to get a uniform film.
Some products showed a sticky phase. It is desired for sticky products to go through the sticky phase as fast as possible in the dryer to prevent fouling.
If a product foams in the dryer inlet it will be difficult to create a uniform film. To avoid foaming the feed temperature can be lowered or anti-foaming agents can be used.